

REMARKS

Status of Claims

Claims 1-11 are pending in the present application. In the outstanding Office Action, claims 1-11 have been rejected under 35 U.S.C. § 112, second paragraph. Also, claims 1-11 have been rejected on the grounds of prior art.

In the Amendment submitted herein, the specification and the claims 1 and 4-7 have been amended. Support for the amendments is found in the originally filed claims and specification. No new matter has been introduced.

Objection to the Specification

Applicants now respond in turn to the Examiner's concerns expressed in paragraphs 1-4 of the Office Action relating to the specification.

Office Action Paragraph 1.

1.1 In order to address the Examiner's concerns, the specification has been amended at page 11 to capitalize the trademarks, specifically, "Turbomill" and "Cryptron".

1.2-1.5) The Examiner points out inconsistencies between Table 1 and Table 2. In order to address the Examiner's concerns, substitute Table 1 is submitted as attached hereto (ATTACHMENT 1A). This application includes a proper claim for priority under 35 U.S.C. §119 and the International Convention for the Protection of Industrial Property to Japanese Patent Application No. 1999-034907. During preparing an English translation for this

application, typographical errors were included in Table 1. Substitute Table 1 is based on the Japanese priority document, and is consistent with Table 2. In this regard, the corresponding portion of the Japanese priority document and English translation thereof are attached hereto (ATTACHMENT 2).

Office Action Paragraph 2

2. The specification has been objected to as failing to provide proper antecedent basis for the claimed subject matter of claim 7.

In response, claim 7 has been amended to correct the weight average molecular weight (Mw) of the resin as --2,000 to 1,000,000--, to be consistent with the specification.

Office Action Paragraphs 3-4

3-4. The Examiner points out the definition of the term "isolation ratio" as being unclear. In order to address the Examiner's concerns, the third paragraph at page 7 of the specification has been deleted in its entirety. Thus, the term "isolation ratio" is clearly defined as a ratio (% by number) of the number of synchronous light emission particles to the sum of the number of the synchronous and non-synchronous light emission particles, as described at page 8, lines 20-24 of the specification.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 1-11 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In response, claims 1, 4 and 7 have been properly amended to overcome the rejection. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-11 under 35 U.S.C. § 112, second paragraph.

Prior Art Rejections

Claims 1-6, 8-10 and 11/6 have been rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103 as being obvious over Kobayashi (U.S. Patent Number 5,376,493), Ugai et al. (U.S. Patent Number 5, 856,055) or Sato et al. (U.S. Patent Number 5,645,967). The anticipation and obviousness rejections will now be responded to in turn.

Anticipation Rejection, 35 U.S.C. § 102(b)

Claims 1-6, 8-10 and 11/6 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Kobayashi (U.S. Patent Number 5,376,493), Ugai et al. (U.S. Patent Number 5, 856,055) or Sato et al. (U.S. Patent Number 5,645,967).

The Examiner states in the Office Action that each of the Kobayashi, Ugai and Sato references disclose a toner including a binder resin, a colorant and at least one element in an amount as recited by Applicants in claim 1. Further, the Examiner states that although the references do not explicitly disclose the isolation ratio element of Applicant's claim 1, such element is presumably included within the references because of compositional similarities and because the references allegedly possess the properties sought by Applicants. Thus, the Examiner concludes that the references each anticipate Applicants' invention.

Applicant herein respectfully submits that the cited references do not explicitly, implicitly, or inherently disclose, or teach the claimed invention, thus, the present anticipation rejections may not be maintained.

In amended claim 1, Applicants recite a toner for developing an electrostatic image comprising a resin binder and a colorant. The toner is recited as containing an amount of not less than 0.1% by weight of an element selected from the group consisting of copper, chromium, iron, zinc and molybdenum, and having an isolation ratio of not more than 10% by number.

To anticipate a claim, it is known that a prior art reference must teach each and every element of the claimed invention. That is, there is an anticipation only if the disclosure in a single reference places a claimed invention in possession of the public. *In re Brown*, 329 F. 2d at 1011 (CCPA, 1964).

As admitted by the Examiner in the outstanding Office Action, none of the prior art references teach a toner including an element selected from copper, chromium, iron, zinc and molybdenum and an isolation ratio of the element not more than 10% by number.

Despite the absence of a teaching in any of the references of Applicants' isolation ratio limitation, the Examiner alleges that it is reasonable to presume that the toner of each one of the prior art references includes such limitation since the toner disclosed in the references meets the compositional limitations of the instant claims and has the properties sought by applicants.

However, Applicants define the isolation ratio as a ratio (% by number) of the number of synchronous light emission particles to the sum of the number of the synchronous and non-synchronous light emission particles (page 8, lines 20-24 of the specification). Also, the synchronous light emission particle is defined as a particle

containing the specified element which synchronously emits light caused by the specified element with light caused by carbon atom, and the non-synchronous light emission particle is defined as a particle containing the specified element which emits light caused by the specified element without being synchronous with light emission caused by carbon atom (page 8, lines 12-20 of the specification).

Therefore, Applicants' isolation ratio is not automatically determined by the compositional limitation of each component nor its specific amount in the composition, but can be varied by several factors which are considered during the manufacturing process of the composition (page 11, lines 11-13, and page 19, lines 5-10 of the specification). That is, the references do not *necessarily* possess the isolation ratio characteristic of Applicant's invention.

Thus, it is not reasonable to presume that the cited references disclose Applicants' isolation ratio limitation simply because the references allegedly disclose toners including compositional limitations of the claimed invention and properties sought by Applicants.

Accordingly, the prior art references relied upon by the Examiner clearly fail to teach all of the limitations recited by Applicants. Specifically, the references fail to teach a toner composition having, among other elements, an isolation ratio of an element of not more than 10% by number. Therefore, the cited references fail to anticipate Applicants' invention and are, thus, not proper prior art under 35 U.S.C. 102. Applicants respectfully request reconsideration and withdrawal of the anticipation rejection of claim 1.

Claims 2-6 and 8 depend from claim 1 and are therefore not anticipated by the cited references for at least the reasons set forth herein above.

Claim 9 recites a developer comprising a toner of claim 1. Claim 10 recites a developer comprising a toner of claim 1 and a carrier. Therefore, by at least the same

reasoning set forth herein above with regard to claim 1, claims 9 and 10 are not anticipated by references relied upon by the Examiner.

Claim 11/6 recites an image forming method wherein the toner of claim 6 used. Claim 6 variably depends from claim 1 and further defines the isolation ratio of the element as being not more than 2.5% by number. Thus, for at least the reasons set forth herein above with reference to independent claim 1, claim 11 is not anticipated by the cited references relied upon by the Examiner.

For at least the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the anticipation rejection of claims 1-6, 8-10 and 11/6.

Obviousness Rejection, 35 U.S.C. § 103(a)

Claims 1-6, 8-10 and 11/6 have been rejected under 35 U.S.C. § 103(a) as being obvious over Kobayashi (U.S. Patent Number 5,376,493), Ugai et al. (U.S. Patent Number 5,856,055) or Sato et al. (U.S. Patent Number 5,645,967).

At least the isolation ratio limitation, as recited by Applicants in claim 1, is not explicitly, implicitly, or inherently taught by the cited references. Further, this limitation is not suggested by the cited references. Therefore, there exists no prima facie obviousness and, accordingly, the rejection may not be maintained.

As discussed above relative to the outstanding anticipation rejection, Applicants' isolation ratio is determined by several factors during the manufacturing process of the composition and is not simply a function of compositional constituents nor amounts thereof. That is, in possessing a similar composition having similar properties as Applicants' invention, as alleged by the Examiner, the cited references do not necessarily possess Applicants' recited isolation

ratio limitation.

In this regard, Applicants submit a declaration under 37 C.F.R. § 1.132, as attached hereto (ATTACHMENT 3). Pursuant to the method disclosed in each prior art reference, toner samples (Samples K (Kobayashi), Q and R (Ugai), and S (Sato)) were prepared, and evaluated according to analytical method described in the present invention. As shown in the table included in the declaration, Kobayashi's sample has the isolation ratio of 12.6. Two samples of Ugai have 18.3 and 13.7 of the isolation ratio. The isolation ratio of Sato's sample S is 14.2. None of the samples meet the isolation ratio limitation of not more than 10% as recited in Applicants' claim 1.

Further, further the references do not *suggest* Applicants' invention in that the references do not recognize that the isolation ratio defined as disclosed in the specification is one factor in determining quality and performance of a toner. At page 7, lines 1-5, Applicants describe the effect of an isolation ratio larger than 10 % by number. That is, the variation in the electricity of the toner becomes large when the image formation using such a toner is repeated for a long period of time, causing many problems.

Clearly, the prior art references do not teach or suggest, explicitly or implicitly, a toner having 10% or less of an isolation ratio of an element selected from copper, chromium, iron, zinc and molybdenum, as recited in claim 1.

Accordingly, Applicants respectfully submit that claim 1 is not rendered obvious by the cited references because they fail to teach or suggest all the limitations as recited therein.

For at least the same reasons applied to independent claim 1, claims 2-6 and 8, which depend from claim 1, are not rendered obvious by the cited references.

Accordingly, reconsideration and withdrawal of the obvious rejection of claims 1-6, 8-10 and 11/6 is respectfully requested.

Claims 7 and 11/7 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over by Ugai, or Sato combined with Hagiwara (U.S. Patent Number 5, 037,715).

Claim 7 variably depends from what is now believed to be an allowable claim 1. Therefore, claim 7 is allowable for at least the reasons stated herein relative to claim 1.

Claim 11/7 recites an imaging forming method involving the toner of claim 7. As mentioned, claim 7 is allowable as variably depending from what is now believed to be an allowable claim 1. Thus, claim 11 is allowable.

Notwithstanding the foregoing, Applicants submit the following comments regarding the Hagiwara reference.

Hagiwara discloses resins for toner of electrophotography and manufacturing thereof. Hagiwara does not teach or suggest a toner containing an element selected from copper, chromium, iron, zinc and molybdenum and having an isolation number of the element of not more than 2.5 % by number.

Accordingly, claim 7 is not rendered obvious by the references, individually or in any combination. Similarly, claim 11/7 is patentable over the references.

For at least the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 7 and 11/7 under 35 U.S.C. § 103(a).

Conclusion

As discussed above, claims 1-11 are not anticipated nor rendered obvious by the prior art references relied upon by the Examiner, individually or in any combination.

Also, by amendments to the claims and specification, the rejection under 35 U.S.C. § 112, second paragraph, and objection to the specification have been completely addressed.

It is believed that the amendments and remarks fully comply with the Office Action, and

the claims, as amended herein, are allowable to Applicants. Thus, Applicants respectfully request that the rejection of claims 1-11 be reconsidered and withdrawn and the application be allowed and passed to issue.

The Examiner is invited to contact Applicants' attorneys at the below-listed phone number regarding this response with amendment and remarks or otherwise concerning this application.

Please find enclosed with this response, the necessary petition for extension of time and the required fee. If there are any additional charges due with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Applicants' attorneys.

Respectfully submitted,

TOMOMI OSHIBA ET AL.

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attach
#5

ATTACHMENT 1A

Table 1

SUB C7

A2

			Example			
			1	2	3	4
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1	100	100	100	100
		Styrene-acrylate resin 2				
		Polyester resin				
	Colorant	Magnetite	105	105	105	105
		Copper phthalocyanine type cyan pigment				
		Quinacridone magenta type pigment				
		Benzidine yellow type pigment				
		Carbon black				
	Mold releasing agent	Low molecular weight polypropylene	3.5	3.5	4	3.5
		Low molecular weight polyethylene				
		Fatty acid amide wax				
	Charge controlling agent	Iron-azo complex	1	1	1	0.7
		Chromium salicylic acid complex				
		Zinc salicylic acid complex				
		Molybdenum quaternary ammonium complex				
External additive (Added amount to colored particle in parts by weight)	Silica		1	1	1	1
	Positively chargeable silica					
	Titanium oxide					

*A2
Control*

			Example			
			5	6	7	8
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1				
		Styrene-acrylate resin 2				
		Polyester resin	100	100	100	100
	Colorant	Magnetite				
		Copper phthalocyanine type cyan pigment	3	3	3	3
		Quinacridone magenta type pigment				
		Benzidine yellow type pigment				
		Carbon black				
	Mold releasing agent	Low molecular weight polypropylene			2	2
		Low molecular weight polyethylene	3	3		
		Fatty acid amide wax			2	2
	Charge controlling agent	Iron-azo complex				
		Chromium salicylic acid complex	2.5			
		Zinc salicylic acid complex				
		Molybdenum quaternary ammonium complex				
	External additive (Added amount to colored particle in parts by weight)	Silica	2.5	2.5	2.5	2.5
		Positively chargeable silica				
		Titanium oxide	0.5	0.5	0.5	0.5

A2 cont'd

			Example				
			9	10	11	12	13
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1					
		Styrene-acrylate resin 2	100				
		Polyester resin		100	100	100	100
	Colorant	Magnetite					
		Copper phthalocyanine type cyan pigment	3				
		Quinacridone magenta type pigment		4		4	
		Benzidine yellow type pigment			4		4
		Carbon black					
	Mold releasing agent	Low molecular weight polypropylene	4	4	4	4	4
		Low molecular weight polyethylene					
		Fatty acid amide wax	5				
		Iron-azo complex					
	Charge controlling agent	Chromium salicylic acid complex				2	2
		Zinc salicylic acid complex		2	2		
		Molybdenum quaternary ammonium complex					
	External additive (Added amount to colored particle in parts by weight)	Silica	2.5	2.5	2.5	2.5	2.5
		Positively chargeable silica					
		Titanium oxide	0.5	0.5	0.5	0.5	0.5

A2
Cont'd

			Example			Compara -tive example	
			14	15	16	1	2
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1	100	100	100		100
		Styrene-acrylate resin 2					
		Polyester resin				100	
	Colorant	Magnetite				105	
		Copper phthalocyanine type cyan pigment					
		Quinacridone magenta type pigment					
		Benzidine yellow type pigment					
		Carbon black	10	10	10		10
	Mold releasing agent	Low molecular weight polypropylene	4	4	4		4
		Low molecular weight polyethylene				4	
		Fatty acid amide wax					
	Charge controll- ing agent	Iron-azo complex		2.5		1	1
		Chromium salicylic acid complex	2				
		Zinc salicylic acid complex					
		Molybdenum quaternary ammonium complex			2		
	External additive (Added amount to colored particle in parts by weight)		Silica	2.5	2.5		1
Positively chargeable silica					1		
Titanium oxide			0.5	0.5			0.5

ATTACHMENT 1B

Table 1

			Example			
			1	2	3	4
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1	100	100	100	100
		Styrene-acrylate resin 2				
		Polyester resin				
	Colorant [Colorant]	Magnetite	105	105	105	105
		Copper phthalocyanine type cyan pigment				
		Quinacridone magenta type pigment				
		Benzidine yellow type pigment				
		Carbon black				
	Mold releasing agent [Mold releasing agent]	Low molecular weight polypropylene	3.5	3.5	4	3.5
		Low molecular weight polyethylene				
		Fatty acid amide wax				
		Iron-azo complex	1	1	1	0.7
	Charge controlling agent [Charge controlling agent]	Chromium salicylic acid complex				
		Zinc salicylic acid complex				
		Molybdenum quaternary ammonium complex				
		Silica	1	1	1	1
External additive (Added amount to colored particle in parts by weight)	Positively chargeable silica					
	Titanium oxide					

			Example				
			5	6	7	8	
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1					
		Styrene-acrylate resin 2					
		Polyester resin	100	100	100	100	
	Colorant [Colorant]	Magnetite					
		Copper phthalocyanine type cyan pigment	3	3	3	3	
		Quinacridone magenta type pigment					
		Benzidine yellow type pigment					
		Carbon black					
	Mold releasing agent [Mold releasing agent]	Low molecular weight polypropylene			2	2	
		Low molecular weight polyethylene	3	3			
		Fatty acid amide wax			<u>2</u>	<u>2</u>	
	Charge controlling agent [Charge controlling agent]	Iron-azo complex					
		Chromium salicylic acid complex	<u>2.5</u>				
		Zinc salicylic acid complex	[2.5]				
		Molybdenum quaternary ammonium complex					
	External additive (Added amount to colored particle in parts by weight)		Silica	2.5	2.5	2.5	2.5
			Positively chargeable silica				
			Titanium oxide	0.5	0.5	0.5	0.5

			Example				
			9	10	11	12	13
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1					
		Styrene-acrylate resin 2	100				
		Polyester resin		100	100	100	100
	Colorant [Colorant]	Magnetite					
		Copper phthalocyanine type cyan pigment	<u>3</u>				
		Quinacridone magenta type pigment		4		4	
		Benzidine yellow type pigment			4		4
		Carbon black					
	Mold releasing agent [Mold releasing agent]	Low molecular weight polypropylene	4	4	4	4	4
		Low molecular weight polyethylene					
		Fatty acid amide wax	<u>5</u>				
		Iron-azo complex				[2]	[2]
	Charge controll- ing agent [Charge controll- ing agent]	Chromium salicylic acid complex		[2]	[2]	<u>2</u>	<u>2</u>
		Zinc salicylic acid complex		<u>2</u>	<u>2</u>		
		Molybdenum quaternary ammonium complex					
		Silica	2.5	2.5	2.5	2.5	2.5
External additive (Added amount to colored particle in parts by weight)	Positively chargeable silica						
	Titanium oxide		0.5	0.5	0.5	0.5	0.5

Receipt of
raw material
composition
of colored
particle
(Parts by
weight)

			Example			Compara- tive example	
			14	15	16	1	2
Receipt of raw material composition of colored particle (Parts by weight)	Binder resin	Styrene-acrylate resin 1	100	100	100		100
		Styrene-acrylate resin 2				100	
		Polyester resin				105	
	Colorant [Colorant]	Magnetite					
		Copper phthalocyanine type cyan pigment					
		Quinacridone magenta type pigment					
		Benzidine yellow type pigment					
		Carbon black	10	10	10		10
	Mold releasing agent [Mold releasing agent]	Low molecular weight polypropylene	4	4	4		4
		Low molecular weight polyethylene				4	
		Fatty acid amide wax					
		Iron-azo complex			2.5	1	1
	Charge controll- ing agent [Charge controll- ing agent]	Chromium salicylic acid complex	2				
		Zinc salicylic acid complex					
		Molybdenum quaternary ammonium complex				2	
			2.5	2.5		1	[25] - 2.5
External additive (Added amount to colored particle in parts by weight)		Silica				1	
		Positively chargeable silica	0.5	0.5			0.5
		Titanium oxide					

ATTACHMENT 2

【表1】

(A)

		実 施 例																比 較 例	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2
		100	100	100	100										100	100	100		100
結 着 樹 脂	スチレン-アクリル系樹脂1	100	100	100	100										100	100	100		100
	スチレン-アクリル系樹脂2									100									
	ポリエステル樹脂					100	100	100	100		100	100	100	100				100	
	マグネタイト	105	105	105	105													105	
着 色 剤	銅クロロアニン系染料					3	3	3	3	3									
	キナリドン系染料										4		4						
	ベンジン系イエロー染料											4		4					
	カーボンブラック																		
離 型 剤	低分子量ポリプロピレン	3.5	3.5	4	3.5		2	2	2	4	4	4	4	4	4	4	4		10
	低分子量ポリエチレン					3	3											4	4
荷 電 剤 細 剤	脂肪族アミド系ワックス						2	2	2	5									
	アノ系染料	1	1	1	0.7											25		1	1
	サリチル酸クロム錯体				2.5								2.5	2.5	2.5				
	サリチル酸亜鉛錯体										2.5	2.5							
外部添加剤 (着色粒子100 に対する添加量 (重量部))	4級アモニウムモリブデン酸塩																2		
	シリカ	1	1	1	1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		1	2.5
	正常性シリカ																		
	酸化チタン					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5			0.5

着色粒子用材料の配合処方 (重量部)

【0057】

<実施例17>

Table 1

[illegible]

ATTACHMENT 3

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

A marked up version of Table 1 appears as ATTACHMENT 1B.

A marked up version of the paragraph replaced on the eleventh⁸ page of the specification follows:

“The number of the particle containing the specified element which synchronously emits light caused by the specified element with light caused by carbon atom, hereinafter referred to as a synchronous light emission particle, and the number of the particle containing the specified element which emits light caused by the specified element without synchronous with light emission caused by carbon atom, hereinafter referred to as a non-synchronous light emission particle, are counted. The ratio of the number of the synchronous light emission particle to the sum of the number of the synchronous and non-synchronous light emission particles is defined as the [isolation] isolation ratio of the specified element in percent by number.”

A marked up version of the paragraph replaced on the eleventh⁸ page of the specification follows:

“In Toner A, the isolation ratio of the specified element can be controlled by changing conditions of the crushing or the classification. The isolation of the specified element can be inhibited when the crushing is performed under a mild condition so as to inhibit crushing at the interface between the substance containing the specified element and the resin. Particularly, a mechanical crushing method is preferable since crushing at the interface is difficultly occurred and the formation of the isolated matter can be inhibited by such the method compared with an air-current crushing method. Examples of the mechanical crushing apparatus include

[Turbomill] TURBOMILL, manufactured by Turbo Kogyo Co., Ltd., and [Cryptron] CRYPTRON manufactured by Kawasaki Juko Co., Ltd. In the classifying process, a suitable isolation ratio can be obtained by repeating the classification while feedbacking the result of monitoring on the final isolation ratio.”

A marked up version of Table 1 at pages 28-31 of the specification is attached hereto.

IN THE CLAIMS

A marked up version of claims 1, 4, 5 and 7 follows:

1. (Amended/Marked up) A toner for developing an electrostatic image comprising a resin binder and a colorant, wherein the toner contains an amount of not less than 0.1% by weight of an element selected from the group consisting of copper, chromium, iron, zinc and molybdenum [elements of the Groups of 1B, 2B, 4B, 5B, 6B, 7B, 8, 3A and 4A of the fourth and fifth periodic of the long periodic table of the elements], and the isolation ratio of the element is not more than 10% by number.

4. (Amended/Marked up) The toner of claim 1, wherein the element is copper, iron, [and] or zinc.

5. (Amended/Marked up) The toner of claim 1, wherein the element is [copper, chromium, iron, zinc or] molybdenum.

6. (Amended/Marked up) The toner of claim [5] 1, wherein the isolation ratio of the element is not more than 2.5% by weight.

7. (Amended/Marked up) The toner of claim 6, wherein Mn of [resin of] the binder resin is 1,000 to 100,000, Mw of the resin is [2,00] 2,000 to 1,000,000, and a molecular weight distribution Mw/Mn is 1.5 to 100.